WHAT IS CLAIMED IS:

Please amend the claims as follows:

102. (Currently amended) A system for analyzing radiation from an extended source having at least two spatial components that emit or scatter radiation, comprising:

first optics collecting and focusing radiation from said extended source to form at least two images along an encoding axis onto an encoding plane, said images corresponding to said spatial components;

a two dimensional spatial radiation modulator rotated about a rotation axis and positioned in said encoding plane so that said encoding axis is along a radial axis, said modulator having at least two radiation filters located at different radii from said rotation axis, said filters occupying distinct annular regions and modulating the intensities~~y~~ of ~~a~~ corresponding spatial components with different modulation functions, to provide an encoded beam comprising at least ~~one~~ two encoded spatial components as said modulator is rotated about said rotation axis;

a detector;

second optics for collecting and directing said encoded beam onto said detector, causing the detector to provide an output; and

computer analyzing signals generated by said detector in response to said encoded beam.

103. (Previously presented) The system of claim 102, wherein said extended source is an assembly of different samples.

104. (Currently amended) A method for analyzing radiation from an extended source having at least two spatial components that emit or scatter radiation, comprising:

providing radiation from an extended source having at least two spatial components that emit or scatter radiation;

collecting and focusing radiation from said extended source to form at least two images along an encoding axis onto an encoding plane, said images corresponding to said spatial components;

positioning a two dimensional spatial radiation modulator in said encoding plane and rotating said modulator about a rotation axis so that said encoding axis is along a radial axis, said modulator having at least two radiation filters located at different radii from said rotation axis, said filters occupying distinct annular regions and modulating the intensitiesy of a corresponding spatial components with different modulation functions to provide an encoded beam comprising at least ~~one~~ two encoded spatial components as said modulator is rotated about said rotation axis;

collecting and directing said encoded beam onto said detector; and

analyzing signals generated by said detector in response to said encoded beam.

105. (Previously presented) The method of claim 104, wherein said extended source is an assembly of different samples.

106. (Currently amended) A radiation spectrum analyzer comprising:

at least one source providing a plurality of radiation components;

first optics collecting radiation from said source and forming an image onto an encoding plane, said image comprising at least two radiation components substantially separated from one another along an encoding axis;

a two dimensional spatial radiation modulator rotated about a rotation axis and positioned in said encoding plane so that said encoding axis is substantially along a radial axis, said modulator having at least one radiation filter pair to provide an encoded beam as said modulator is rotated about said rotation axis, said pair comprising two radiation filters located at different radii from said rotation axis for modulating the intensitiesy of corresponding radiation components, said filters having modulation functions that are complementary to each other, to provide a single encoded component, each of said encoded components having an amplitude and phase which is determined by the relative intensity of said corresponding radiation components;

a detector;

second optics collecting and directing said encoded beam onto said detector, causing the detector to provide an output; and

computer analyzing signals generated by said detector in response to said encoded beam.

107. (Previously presented) The analyzer of claim 106, wherein the respective widths of said filters of said pair are engineered to substantially null the amplitude of said encoded component.

108. (Previously presented) The analyzer of claim 106, wherein said filters of said pair are substantially adjacent to one another.

109. (Previously presented) The analyzer of claim 106, wherein said first optics includes at least one refractive or diffractive element and said radiation components correspond to substantially
distinct spectral components of said source.

110. (Previously presented) The analyzer of claim 106, wherein said source is an extended source and said radiation components correspond to substantially distinct spatial components of said
extended source.

111. (Currently amended) A method for analyzing a radiation spectrum, comprising:

providing at least one source providing radiation;

collecting said radiation and forming an image onto an encoding plane, said image comprising at least two radiation components substantially separated from one another along an encoding axis;

positioning a two dimensional spatial radiation modulator in said encoding plane and rotating said modulator about a rotation axis so that said encoding axis is substantially along a radial axis, said modulator having at least one radiation filter pair to provide an encoded beam, said pair comprising two radiation filters located at different radii from said rotation axis for modulating the intensitiesy of corresponding radiation components, said filters having modulation functions that are complementary to each other, to provide a single encoded component, said encoded component having an amplitude and phase which is determined by the

relative intensity of said corresponding radiation components as said modulator is rotated about said rotation axis;

collecting and directing said encoded beam onto a detector; and

analyzing signals generated by said detector in response to said encoded beam.

112. (Previously presented) The method of claim 111, wherein said filters of said pair are substantially adjacent to one another, and said analyzing includes calculating the derivative of the image intensity with respect to position along said encoding axis evaluated at the border between said adjacent radiation filters.

113. (Previously presented) The method of claim 111, wherein said forming includes refracting or
diffracting said radiation, and said components correspond to substantially distinct spectral components of said source.

114. (Previously presented) The method of claim 111, wherein said source is an extended source and said radiation components correspond to substantially distinct spatial components of said
extended source.

115. (Previously presented) A method for analyzing radiation, comprising:

providing a radiation beam comprising at least one selected radiation component;

collecting said radiation beam and focusing each said radiation component at a corresponding point along an encoding axis onto an encoding plane;

positioning a two dimensional spatial radiation modulator in said encoding plane and rotating the modulator about a rotation axis so that said encoding axis is substantially along a radial axis, said modulator having at least one radiation filter at a radius from said rotation axis, said filter modulating the intensity of a corresponding radiation component to provide an encoded beam comprising at least one encoded component;

collecting and directing said encoded beam onto a detector so that said detector provides an output; and

analyzing signals generated by said detector, said analyzing including subtracting the detector output from an expected detector output as a function of the rotation angle of said modulator about said rotation axis to provide an output difference function, said analyzing further comprising analyzing said output difference function to detect sub-rotational period transients in the amplitude of one or more encoded components.

116. (Previously presented) The method of claim 115, further comprising adjusting the speed of said rotation in response to said output difference function.

117. (Currently amended) A method for analyzing radiation, comprising:

providing a first radiation beam comprising at least one selected radiation component;

collecting said first beam and focusing each said radiation component at a corresponding point along an encoding axis onto an encoding plane;

positioning a two dimensional spatial radiation modulator in said encoding plane and rotating the modulator about a rotation axis so that said encoding axis is substantially along a radial axis, said modulator comprising a pattern on a rotating substrate, said pattern having at least one radiation filter at a radius from said rotation axis, said filter modulating the intensity of a corresponding component to provide an encoded beam comprising at least one encoded component, said pattern further comprising at least one series of marks, said marks having optical characteristics substantially different from said substrate, said series of marks being substantially confined to an annular region of said modulator with respect to said rotation axis;

collecting and directing said encoded beam onto a detector so that the detector provides a data signal in response to said encoded beam;

analyzing said data signal, said analyzing including determining the modulated amplitude of said at least one encoded component;

positioning a second radiation source and second detector so that said marks modulate a beam from said ~~light~~ second radiation source to said second detector to generate an alignment signal;

analyzing said alignment signal to detect wobble of said modulator and alignment errors of said pattern on said modulator.

118. (Previously presented) The method of claim 117, further comprising dynamically positioning one or more optical elements in response to said alignment signal to minimize the undesired effects of said wobble and said alignment errors.

119. (Currently amended) A system for monitoring radiation from at least one tunable radiation source,
comprising:

a beam comprising at least one radiation component from a corresponding radiation source, said radiation component ~~corresponding to a distinct radiation source~~ having an intensity and a center wavelength;

first optics collecting and dispersing said beam and focusing each said radiation component to form a corresponding image along an encoding axis onto an encoding plane;

a two dimensional spatial radiation modulator rotated about a rotation axis and positioned in said encoding plane so that said encoding axis is substantially along a radial axis such that a change in the center wavelength of said radiation component will cause said corresponding image to move substantially along said radial axis, said modulator having at least one radiation filter pair for modulating the intensity of a corresponding radiation component to provide an encoded beam comprising at least one encoded component, said pair comprising two radiation filters located at different radii from said rotation axis and having modulation functions that are complementary to each other such that the amplitude and phase of said encoded component is determined by the relative proportion of radiation incident on the two filters;

second optics collecting and directing said encoded beam onto a detector; and

computer analyzing signals generated by said detector in response to said encoded beam.

120. (Currently amended) The system of claim 119, further comprising at least one control signal for adjusting ~~a~~said center wavelength of said at least one source in response to the signals generated by the detector to tune said at least one sources.

121. (Previously presented) The system of claim 119, wherein said radiation filters comprising said pair are substantially adjacent to one another.

122. (Currently amended) The system of claim 121, wherein the border between said adjacent radiation filters is substantially located at the radius which correspond to ~~a~~the nominal or desired center wavelength for said radiation source.

123. (Currently amended) A method for monitoring radiation from at least one tunable radiation source, comprising:

providing a beam comprising at least one radiation component, each said radiation component from a corresponding ~~to a~~ distinct radiation source and having an intensity and a center wavelength;

optics collecting and dispersing said beam and focusing each said radiation component to ~~for~~ a corresponding image along an encoding axis onto an encoding plane;

positioning a two dimensional spatial radiation modulator in said encoding plane and rotating the modulator about a rotation axis so that said encoding axis is substantially along a radial axis such that a change in the center wavelength of said radiation component will cause said corresponding image to move substantially along said radial axis, said modulator having at least one radiation filter pair for modulating incident radiation to provide an encoded beam comprising at least one encoded component, said pair comprising two radiation filters located at different radii from said rotation axis and having modulation functions that are complementary to each other such that the amplitude and phase of said encoded component are determined by the relative proportion of radiation from the beam incident on the two filters;

collecting and directing said encoded beam onto a detector; and

analyzing signals generated by said detector in response to said encoded beam.

124. (Currently amended) The method of claim 123, further comprising adjusting a ~~said~~ center wavelength of at least one radiation ~~of said~~ sources in response to signals generated by said detector.

125. (Previously presented) The method of claim 123, wherein said radiation filters comprising said pair are substantially adjacent to one another.

126. (Currently amended) The method of claim 125, wherein the border between said adjacent radiation filters is substantially located at the radius which correspond to a~~the~~ nominal or desired center wavelengths for said radiation source.

127-129 cancelled.

130. (Currently amended) A two dimensional spatial radiation modulator adapted to be rotated about a rotation axis to modulate at least two components of an incident radiation beam to encode said beam as said substrate is rotated about said rotation axis, said modulator comprising a substrate and at least one radiation filter pair, said pair comprising two radiation filters located at different radii from said rotation axis for modulating the intensities of corresponding radiation components, said filters having modulation functions that are complementary to each other to provide a single encoded component, said encoded component having an amplitude and phase which is determined by the relative intensity of said corresponding radiation components.

131. (Previously presented) The modulator of claim 130, wherein said filters of said pair are substantially adjacent to one another.